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REMARKS

Applicant respectfully submits that all the claims presently on file are in condition for allowance, which action is earnestly solicited.

THE DRAWINGS

The drawings were objected to, on the ground that they do not show the component "electronic range finding device" recited in claim 11. Applicant respectfully submits that claim 11 has been canceled without prejudice, obviating the need to revise the drawings.

THE CLAIMS

CLAIMS REJECTIONS UNDER 35 U.S.C. 112, SECOND PARAGRAPH

The claims were rejected under 35 U.S.C. 112, second paragraph, for containing certain informalities. These informalities have now been addressed in satisfaction of 35 U.S.C. 112.

CLAIMS REJECTION UNDER 35 U.S.C. 102

Claims 1 and 12-16 were rejected under 35 U.S.C. 102(b) as anticipated by Kurschner et al. (U.S. Patent No. 5,497,704), hereinafter referred to as "Kurschner".

A. Legal Standard for Lack of Novelty (Anticipation)

The standard for lack of novelty, that is, for "anticipation," is one of strict identity. To anticipate a claim for a patent, a **single prior source must contain** all its essential elements, and the burden of proving such anticipation is on the party making such assertion of anticipation. Anticipation cannot be shown by combining more than one reference to show the elements of the claimed invention. The amount of newness and usefulness need only be minuscule to avoid a finding of lack of novelty.

The following are two court opinions in support of Applicant's position of non anticipation, with emphasis added for clarity purposes:

- "Anticipation under Section 102 can be found only if a reference shows **exactly** what is claimed; where there are **differences** between the reference disclosures and the claim, a rejection must be based on obviousness under Section 103." *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).
- "**Absence** from a cited reference **of any element** of a claim of a patent negates anticipation of that claim by the reference." *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986), on rehearing, 231 USPQ 160 (Fed. Cir. 1986).

B. Brief Summary of the Present Invention

Prior to presenting substantive arguments in favor of the allowability of the claims on file, it might be desirable to summarize the present invention. A low velocity air burst munition and launcher system allow the user to program the munition to detonate in the air at a specified range from the muzzle. The system further allows the munition to detonate upon impact or self-destruct if the target is missed.

The system allows the user to program and reset the munition multiple times, and allows the user to perform this operation at night in cold weather conditions. The system requires the user to manually input the range ir to a fuze programming device prior to projectile launch.

The fuze programming device is capable of direct interface with electronic range determining devices. The system employs electrical contacts in the chamber of the munition launcher barrel and on the projectile body to complete the circuit used for programming. Furthermore, this system is capable of integrating a magnetic induction method of programming.

Furthermore, FIGS. 6A and 6B of the present invention illustrate a closed and open position of the munition launcher. The data communication cable 410 connects the fuze setter 20 to the chamber contacts 405. The data communication cable 410 is long enough to allow the munition launcher barrel 25 to slide from the fully closed position (FIG. 6A) to the fully open position (FIG. 6B). In a further embodiment, the flexibility and length of the data communication cable 410 allows for attachment to a munition launcher barrel 25 that opens and closes in a manner other than sliding.

The battery 535 that powers the fuze setter can be a conventional commercially available battery such as, for example, a AA alkaline, a AAA alkaline, or a 3 volt lithium. This class of battery is lightweight and portable.

C. Independent Claim 1 in Light of the Kurschner Reference

Applicant will now present arguments in support of the allowance of independent claim 1, and the claims dependent thereon, over the Kurschner reference. Representative claim 1 as amended, will now be discussed and in light of the Kurschner reference.

C.1. The Kurschner reference does not teach a data communication cable with both ends connected to the weapon.

The present invention discloses a fuze setter on the weapon for setting a range at which the fuze detonates the low velocity air burst munition and a **flexible data communication cable that connects the fuze setter and the fuze on the munition in the launcher of the same weapon**. The fuze calculates a flight time for the range at which the fuze is triggered from a ballistics characteristic for the low velocity air burst munition stored in the fuze and the data communication cable moves with the munition launcher barrel when the gun fires.

Kurschner generally teaches a magnetic sensor system for use with a fuze of a projectile comprising a receiver inductively connected to the transmitter, and a spin signal means conductively connected to the receiver. **However, Kurschner does not teach a flexible data communication cable that has one end connecting to the fuze and another end connecting to a transmitter.** Furthermore, **Kurschner does not teach a cable that moves or slides during the firing of the munition.**

CLAIMS REJECTION UNDER 35 U.S.C. 103

Claims 2-4 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kurschner et al. (U.S. Patent No. 5,497,704), (hereinafter referred to as "Kurschner") in view of Kaiser et al. Claims 5-8 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kurschner et al. in view of Desai et al. (hereinafter referred to as "Desai") or Moore (hereinafter referred to as "Moore"). Claims 9-11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kurschner et al. in view of Smith et al. (hereinafter referred to as "Smith") and claim 17 was rejected under 35 U.S.C. 103(a) as being unpatentable over Kurschner et al. in view of Hall et al. (hereinafter referred to as "Hall").

Applicant respectfully traverses these rejections and submits that none of the cited references discloses the elements and features of the claims on file, whether these references are considered individually or in combination with each other. To this end, Applicant respectfully submits the following arguments:

A. Legal Standards for Obviousness

The following legal authorities set the general legal standards in support of Applicant's position of non-obviousness, with emphasis added for added clarity:

- MPEP §2143.03, "All Claim Limitations Must Be Taught or Suggested: To establish prima facie obviousness of a claimed invention, **all the claim limitations must be taught or suggested by the prior art**. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "**All words in a claim must be**

considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)."

- MPEP §2143.01, "The Prior Art Must Suggest The Desirability Of The Claimed Invention: There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (**The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a prima facie case of obvious was held improper.**). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. Al-Site Corp. v. VSI Int'l Inc., 174 F.3d 308, 50 USPQ2d 1161 (Fed. Cir. 1999).

- "**Obviousness cannot be established** by combining the teachings of the prior art to produce the claimed invention, **absent some teaching or suggestion** supporting the combination." *In re Fine, 837 F.2d at 1075, 5 USPQ2d at 1598* (citing *ACS Hosp. Sys. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)*). **What a reference teaches** and whether it teaches toward or **away from the claimed invention** are questions of fact. See *Raytheon Co. v. Roper Corp., 724 F.2d 951, 960-61, 220 USPQ 592, 599-600 (Fed. Cir. 1983)*, cert. denied, *469 U.S. 835, 83 L. Ed. 2d 69, 105 S. Ct. 127 (1984)*. "

- "When a rejection depends on a combination of prior art references, there must be **some teaching, suggestion, or motivation** to combine the references. See *In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987)." Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention **where there is some teaching, suggestion, or motivation** to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See MPEP 2143.01; In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

- "With respect to core factual findings in a determination of patentability, however, the **Board cannot simply reach conclusions based on its own understanding or experience** -- or on its assessment of what would be basic knowledge or common sense. **Rather, the Board must point to some concrete evidence in the record** in support of these findings." See In re Zurko, 258 F.3d 1379 (Fed. Cir. 2001).

- "We have noted that **evidence of a suggestion, teaching, or motivation to combine** may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved, see Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996), Para-Ordinance Mfg. v. SGS Imports Intern., Inc., 73 F.3d 1085, 1088, 37 USPQ2d 1237, 1240 (Fed. Cir. 1995), although "the suggestion more often comes from the teachings of the pertinent references," Rouffet, 149 F.3d at 1355, 47 USPQ2d at 1456. The range of sources available, however, does not diminish the requirement for actual evidence. That is, **the showing must be clear and particular**. See, e.g., C.R. Bard, 157 F.3d at 1352, 48 USPQ2d at 1232. **Broad conclusory statements regarding the teaching of multiple references, standing alone, are not "evidence."** E.g., McElmurry v. Arkansas Power & Light Co., 995 F.2d 1576, 1578, 27 USPQ2d 1129, 1131 (Fed. Cir. 1993) ("Mere denials and conclusory statements, however, are not sufficient to establish a genuine issue of material fact."); In re Sichert, 566 F.2d 1154, 1164, 196 USPQ 209, 217 (CCPA 1977)." See In re Dembiczak, 175 F. 3d 994 (Fed. Cir. 1999).

- "To prevent the use of hindsight based on the invention to defeat patentability of the invention, **this court requires the examiner to show a motivation to combine the references** that create the case of obviousness. In other words, **the examiner must show reasons** that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references **for combination in the manner claimed**." See In re Rouffet, 149, F.3d 1350 (Fed. Cir. 1998).

- The mere fact that references can be combined or modified does not render the resultant combination obvious **unless the prior art also suggests the desirability of the combination**. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, **there must be a suggestion or motivation in the reference** to do so." 916

F.2d at 682, 16 USPQ2d at 1432.). See also In re Fritch, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992) (flexible landscape edging device which is conformable to a ground surface of varying slope not suggested by combination of prior art references).

- If the **proposed modification would render the prior art invention being modified unsatisfactory** for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

B. Application of the Obviousness Standard

B.1. The hypothetical combination of Kurschner and Kaiser does not generate the same or similar product as the present invention.

Kurschner generally teaches a magnetic sensor system for use with a fuze of a projectile comprising a receiver inductively connected to the transmitter, and a spin signal means conductively connected to the receiver

Kaiser generally teaches a control device arranged outside the firing barrel. Kaiser discloses a mechanical time fuze with a setting device corresponding to the electronic setting of an electronic fuze. FIG. 1 of Kaiser shows contact rings 5 that are connected to a setting device through wire connections 7. The connection of the contact rings 5 toward the outside is effected in customary manner by contact nipples or tongues. FIG. 2A shows the setting and control device connected by a cable to a current supply, both are external to the firing weapon. The firing barrel, setting device, wire and battery are stationary and remain stationary during the munition launching or weapon firing.

The hypothetical combination of Kurschner and Kaiser would generate a system for use with a fuze of a projectile comprising a signal means conductively connected to a receiver utilizing wire connections and contact nipples. **The firing barrel, setting device, wire and battery are stationary and remain stationary during the munition launching or weapon firing.**

The present invention teaches a communication cable 410 that connects the fuze setter 20 to the chamber contacts 405. As illustrated by FIG. 6 (FIGS. 6A and 6B), the data communication cable 410 is long enough to allow the munition launcher barrel 25 to slide from the fully closed position (FIG. 6A) to the fully open position (FIG. 6B). In a further embodiment, the flexibility and length of the data communication cable 410 allows for attachment to a munition launcher barrel 25 that opens and closes in a manner other than sliding. FIG. 6 shows the communication cable 410 as an integrated component of the firing weapon, having both its ends connected to the gun. Moreover, **as the barrel moves or slides to launch the munition, the data communication cable 410 moves or slides with the barrel.**

The hypothetical combination of Kurschner and Kaiser differs from the current invention in several aspects. The wire or cable has one end connected to the weapon and another end connected to the setting and control device, which is structurally separated from the weapon.

Another difference is that **during the weapon firing process, the wire of the hypothetical prior art combination remains stationary.** In contrast, one end of the communication cable of the present invention moves with the

munition launcher barrel during the weapon firing process, while the other end of the communication cable remains stationary with the fuze setter. The present invention is contradictory to the hypothetical combination of Kurschner and Kaiser by having a cable that moves as the weapon fires to launch the munition.

There is no motivation for Kurschner and Kaiser to integrate both ends of the wire into the weapon, and further, there is no motivation to move or slide the wire or cable with a stationary launcher barrel that fires the munition in the weapon.

Hence, the hypothetical combination of Kurschner and Kaiser does not generate the same or similar product as the current invention.

B.2. The hypothetical combination of Kurschner and Desai does not generate the same or similar product as the present invention.

Kurschner generally teaches a magnetic sensor system for use with a fuze of a projectile comprising a receiver inductively connected to the transmitter, and a spin signal means conductively connected to the receiver.

Desai generally discloses an eye safe range finder with a LCD display assembly.

The hypothetical combination of Kurschner and Desai would produce a system for use with a fuze of a projectile comprising a signal means conductively connected to a receiver utilizing wire connections and

contac nipples. The firing barrel, setting device, wire and battery are stationcry and remain stationary during the munition launching. A LCD display assembly connected to the system shows the range of the fuze setting.

As presented earlier, the present invention teaches a communication cable 410 that connects the fuze setter 20 to the chamber contacts 405, as illustrated by FIG. 6 (FIGS. 6A and 6B) and previously described. Moreover, as the barrel moves or slides to launch the munition, the data commu ication cable 410 moves or slides with the barrel. The display 510 for the range from the fuze setting in FIG. 4 is digital, employing four numerals; the right most digit represents the one-tenth decimal place. The display 510 further indicates when the range value has been set. In addition, **the display shows the range that can be set for the munition to explode in the air.**

The hypothetical combination of Kurschner and Desai teaches away from the present invention and has several differences. The wire or cable has one end connected to the weapon and another end connected to the setting and control device which is structurally separated from the weapon.

There is no motivation for Kurschner and Desai to integrate both ends of the wire into the weapon, and further, there is no motivation to connect a display with the magnetic sensor system. In addition, **there is no motivation to display a range for the munition to explode in air when the range finder is part of the hypothetical combination.**

Hence the hypothetical combination of Kurschner and Desai does not generate the same or similar product as the current invention.

B.3. The hypothetical combination of Kurschner and Moore does not generate the same or similar product as the present invention.

Kurschner generally teaches a magnetic sensor system for use with a fuze of a projectile comprising a receiver inductively connected to the transmitter, and a spin signal means conductively connected to the receiver.

Moore generally discloses a range finder and a display for the input from the range finder.

The hypothetical combination of Kurschner and Moore would be a system for use with a fuze of a projectile comprising a signal means conductively connected to a receiver utilizing wire connections and contact nipples. The firing barrel, setting device, wire and battery are stationary and remain stationary during the munition launching. A rangefinder is mounted on the projectile launcher with a display.

The present invention teaches a flexible communication cable 410 that has both ends connected to the weapon, and a display that have been explained above. **The display shows the range that can be set for the munition to explode in the air.**

The hypothetical combination of Kurschner and Moore differs from the current invention in several aspects. The wire or cable has one end

connected to the weapon and another end connected to the setting and control device which is structurally separated from the weapon. An additional difference is that **the display is for showing the results of range finding, not range setting as in the present system**. Furthermore **in the present system, the range can be set for the munition to explode in the air prior to target impact.**

Hence the hypothetical combination of Kurschner and Moore does not generate the same or similar product as the current invention.

B.4. The hypothetical combination of Kurschner and Smith does not generate the same or similar product as the present invention.

Kurschner generally teaches a magnetic sensor system for use with a fuze of a projectile comprising a receiver inductively connected to the transmitter, and a spin signal means conductively connected to the receiver.

Smith generally discloses a gun fire control system with a manual range entry means for entering information to hit a target.

The hypothetical combination of Kurschner and Smith would be a system for use with a fuze of a projectile comprising a signal means conductively connected to a receiver utilizing wire connections and contact nipples. The firing barrel, setting device, wire and battery are stationary and remain stationary during the munition launching. The launcher is connected to a fire control system with **a manual entry means for entering information to hit a target.**

As explained earlier, the present invention teaches a communication cable 410 that connects the fuze setter 20 to the chamber contacts 405, as illustrated by FIG. 6 (FIGS. 6A and 6B) and previously described. Moreover, as the barrel moves or slides to launch the munition, the data communication cable 410 moves or slides with the barrel. Furthermore, the present system has a manual range input or an electronic input from a range finding device. **In the present system the range can be set for the munition to explode in air prior to target impact.**

The hypothetical combination of Kurschner and Smith teaches away from the present invention in that it includes a fire control system and a manual entry means for entering input from a range finder to hit a target.

There is no motivation for the hypothetical combination of Kurschner and Smith to manually input range setting for the munition to explode in air.

Hence, the hypothetical combination of Kurschner and Smith does not generate the same or similar product as the current invention.

B.5. The combination of Kurschner and Hall does not generate the same or similar product as the present invention.

Kurschner generally teaches a magnetic sensor system for use with a fuze of a projectile comprising a receiver inductively connected to the transmitter, and a spin signal means conductively connected to the receiver.

Hall generally discloses an electronic encoder for use in setting fuzes in munitions and is powered by a battery.

The hypothetical combination of Kurschner and Smith would be a system for use with a fuze of a projectile comprising a signal means conductively connected to a receiver utilizing wire connections and contact nipples. The launcher is connected to an electronic encoder for use in setting fuzes in munitions and is powered by a battery.

The present invention teaches in FIGS. 3 and 4 a method by which a circuit is completed between the fuze setter 20 and the fuze 225. The external contacts 230 on the projectile body 215 comprise annular rings of conductive metal separated by an electrical insulator 305 comprised of electrical insulator material. As illustrated in FIG. 4, contact between the external contacts 230 on the projectile body 215 and chamber contacts 405 in the munition launcher barrel 25 occurs when the low velocity air burst munition 15 is chambered in the munition launcher barrel 25 (FIG. 4). The chamber contacts 405 connect to the fuze setter 20 via a data communication cable 410. The external contacts 230 on the projectile body 215 connect to the fuze 225 (FIGS. 2 and 3). Furthermore, the fuze setter is powered by one or a plurality of batteries such as AA alkaline, AAA alkaline and 3 volt lithium. **The low velocity air burst munition 15 is set by default for point-detonation mode and is programmed for air-bursting mode using the fuze setter 20.**

The hypothetical combination of Kurschner and Hall differs from the current invention in that it includes **an electronic encoder for setting the fuzes in munitions.**

Hence, the hypothetical combination of Kurschner and Hall does not generate the same or similar product as the current invention.

CONCLUSION

All the claims presently on file in the present application are in condition for immediate allowance, and such action is respectfully requested. If it is felt for any reason that direct communication would serve to advance prosecution of this case to finality, the Examiner is invited to call the undersigned at the below-listed telephone number.

Respectfully submitted,

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